CONTENTS

Preface
H.J. Seifert (Germany) VII

The 9th ICTA Congress
S. Yariv (Israel)..... 1

REPORTS ON WORKSHOPS

Thermal analysis education
E.A. Turi (USA)..... 13

Calorimetry and thermal analysis in surface science and catalysis
B. Fubini (Italy)..... 37

Kinetics
J.H. Flynn, M. Brown, E. Segal and J. Šesták (USA, South Africa, Romania and Czechoslovakia)..... 45

A study of organic materials using thermal analysis
B. Zvilichovsky (Israel)..... 49

Chemical and physical properties of superconducting materials characterized by thermal analysis
A. Reller (Switzerland)..... 53

PLENARY LECTURES

Early thermometry and differential thermometry *("Lumitron" - ICTA Honoray Membership Lecture)*
R.C. Mackenzie (UK)..... 57

The effect of temperature dependent factors upon the mechanical and surface properties of solids *(1988 ICTA-DuPont Award Lecture)*
D. Dollimore (USA)..... 63

Nontraditional and traditional methods of thermal treatment and analysis in solid-state chemistry and physics *(1988 Bodenheimer Award Lecture of the Israel Group for Thermal Analysis)*
J. Šesták (Czechoslovakia)..... 79

The investigation of ancient oriental materials and artifacts by thermal analysis *(1988 "Mettler" Plenary Lecture)*
H.G. Wiedemann (Switzerland)..... 95

Diagnostics of inorganic materials by diffusion structural analysis *("Israel Chemicals Ltd." Invited Lecture)*
V. Balek (Czechoslovakia)..... 117

PHYSICAL CHEMISTRY

Nonisothermal kinetic analysis - some current problems *(Review)*
E. Segal (Romania)..... 127

The use of thermal analysis techniques in heterogeneous catalysis *(Review)*
F. Janssen (The Netherlands)..... 137

Structural thermochemistry of solids *(Review)*
L. Stoch (Poland)..... 149

Influence of some factors on thermal dissociation of solids
J. Pysiak (Poland)..... 165

Mathematical analysis of the effects of surface heterogeneity in chemisorption: a new/old model
A.S. Gow and J. Phillips (USA)..... 173

The role of thermal analysis and calorimetry in the study of porous or divided materials *(Review)*
J. Rouquerol, F. Rouquerol, Y. Grillet and R. Denoyel (France)..... 183

Quasi-equilibrium adsorption microcalorimetry (of Kr, Ar and N_2) to characterize real microcrystalline surfaces: Application to ZnO
Y. Grillet, F. Rouquerol and J. Rouquerol (France)..... 191

Activation energies of thermal decomposition processes of $MgBr_2 \cdot 6H_2O$
Y. Kirsh, S. Shoval and S. Yariv (Israel)..... 197

INORGANIC CHEMISTRY

Thermal synthesis of inorganic materials *(Review)*
E. Mendelovici (Venezuela)..... 205

Synthesis of oxide superconductors *(Review)*
M. Kamimoto and T. Ozawa (Japan)..... 219

Interactions of high-temperature superconductors with the atmosphere *(Review)*
P.K. Gallagher (USA)..... 229

Binary and ternary compounds, phase diagrams and contaminations in the $YO_{1.5}$-BaO-CuO system auxiliary to superconducting ceramics *(Review)*
J. Šesták (Czechoslovakia)..... 235

Thermal properties of the hydroxides and oxides of lanthanides and actinides *(Review)*
T. Sato (Canada and Japan)..... 249

Calorimetric measurements of the glass transition *(Review)*
M.T. Clavaguera-Mora (Spain)..... 261

Thermal study of superconducting $Ba_2Cu_3RO_{7-x}$ (R = Y, Eu, Gd, Ho)
J. Amador, M.T. Casais, C. Cascales and I. Rasines (Spain)..... 269

The thermal stability of $RBa_{2-x}K_xCu_3O_z$ (R = Y and Eu)
I. Felner (Israel)..... 275

TG and DSC investigation of $CaCl_2 \cdot 6H_2O$, a phase change material for energy storage
N. Bukovec, P. Bukovec and V. Arbanas (Yugoslavia)..... 281

A DSC study of low temperature phase transitions in KH_2PO_4 and $NH_4H_2PO_4$
M. Odlyha and C.D. Flint (UK)..... 289

Thermal decomposition of precipitates from aqueous aluminium phosphate solution by reaction with alkali
T. Sato and K. Sato (Canada and Japan)..... 295

The effect of grinding on porosity and mechanochemical transformations in Al_2O_3 powders
I.J. Lin, S. Nadiv and P. Bar-On (Israel)..... 301

Application of thermal analysis for the investigation of reaction of ammonium nitrate melt with solid zinc oxide
G.M. Rasulić, S.B. Jovanović, LJ.S. Milanović, D.M.Petrović and S.R. Lukić (Yugoslavia)..... 311

Studies on thermal decomposition reactions of cobalt, nickel and zinc thiocyanatobismuthates (III)
A. Cyganski and T. Majewski (Poland)..... 319

ORGANIC CHEMISTRY

Application of thermal analysis to organic chemistry *(Review)*
S. Sarig and J. Fuchs (Israel)..... 325

Phase transitions of cholesteryl cinnamates
K.S. Kunihisa and Y. Satomi (Japan)..... 335

Phenol determination by thermometric titrimetry
J.O. Hill and S. Korce (Australia)..... 341

Prediction of hydrocarbon thermolysis by thermodynamic analysis
S. Sharon (Israel)..... 347

The metastability of glucosyl ceramide in aqueous phase: effect of hydration and phosphatidylcholines of various chain length
Y. Barenholz, D. Bach, T.E. Thompson, E. Freire, M. Correa-Freire and I.R. Miller (Israel and USA)..... 355

POLYMER SCIENCE

Thermal analysis of polymeric materials. Papers presented at the 9th ICTA, Jerusalem *(Review)*
P.J. Haines (UK)..... 365

The application of thermogravimetry for the study of polymer degradation
B.A. Howell (USA)..... 375

DSC studies of thermal events at the glass transition temperature region of partially oriented polyester fibers
D. Selivansky (Israel)..... 381

Optimization of the photocuring of a ternary mixture of methacrylic monomers using DSC
E. Zadok, A. Eitan and I. Tamir (Israel)..... 387

Thermoanalysis of zinc acetate-active carbon catalysts
B.L. Yu (China)..... 395

Geopolymers and synthetic polymers: A comparative study of the isothermal pyrolysis kinetic behavior
H. Bar, R. Ikan and Z. Aizenshtat (Israel)..... 405

MINERALS

The present state of thermal investigations of clays *(Review)*
A. Langier-Kuźniarowa (Poland)..... 413

Thermal analysis of minerals *(Review)*
S. Yariv (Israel)..... 421

Interaction of kaolinite with organic and inorganic alkali salts at 25-1300°C
M. Gábor, L. Pöppl, V. Izvekov and H. Beyer (Hungary)..... 431

Interaction of kaolinite with calcite on heating. IV - Rehydrated and recarbonated samples
L. Heller-Kallai and R.C. Mackenzie (Israel and UK)..... 439

Infrared study of the thermal treatment of sepiolite and palygorskite saturated with organic amines
U. Shuali, L. Bram, M. Steinberg and S. Yariv (Israel)..... 445

Thermal analytic study of the adsorption of crystal violet by montmorillonite
S. Yariv, M. Müller-Vonmoos, G. Kahr and A. Rub (Israel and Switzerland) 457

The high-low inversion of quartz
Y. Deutsch, A. Sandler and Y. Nathan (Israel)..... 467

Studies of the silicon dioxide-dolomite system by thermal analysis
K. Sinko, B. Migaly and M. Gábor (Hungary).....473

Phase transitions in tribochemically activated natural phosphates
Iv. Dombalov, A. Toneva, Iv. Gruncharov, El. Kashchieva and Y. Pelovski (Bulgaria)..... 479

Determination of the intensity of an early iron age conflagration at Tel-Hadar, Israel
S. Shoval, Z. Erez, Y. Kirsh, Y. Deutsch, M. Kochavi and E. Yadin (Israel)..... 485

INSTRUMENTATION AND TECHNIQUES

Software for a combined STA-QMS instrument
E. Kaisersberger and M. Gebhardt (F.R.Germany)..... 493

A heat flux DSC for enthalpy and specific heat determinations to 1700 K
E. Kaisersberger, J. Janoschek and E. Wassmer (F.R.Germany)..... 499

Experiments with a new symmetrical thermo microbalance to 1500°C
E. Kaisersberger and J. Janoschek (F.R.Germany)..... 507

Thermal conductivity and diffusivity measurements by the transient two linear and parallel probe method
P. Morabito (Italy)..... 513

APPLIED CHEMISTRY

Thermal analysis of energetic materials *(Review)*
M.E. Brown (South Africa)..... 521

Simultaneous TG-DTG-DTA-EGA analysis for studies of kerogen
M. Szalkowicz and Z. Kubas (Poland)..... 533

The study of coal by thermal analysis. The effect of measuring conditions on thermal analysis results
J. Więckowska (Poland)..... 541

Erratum..... 549

Author Index..... 551

Subject Index..... 552